Contents

Part I	Overview	
	Reality in High-T _c Superconductivity nderson	2
Part II	Theory	
Recent Adv Phases	vances in the Stability and Properties of Commensurate Flux	
By P. Lede	rer, D. Poilblanc, and T.M. Rice	16
U(1) Gauge By P.A. Le	e Field, t'-J Model and Superconductivity	23
Spectroscop Hamiltonian Doped CuC	pic and Theoretical Estimates of Parameters in Model and Describing the High and Low Energy Scale Physics of Planes	20
By L.H. Tj	eng, H. Eskes, and G.A. Sawatzky (With 3 Figures)	33
	amiltonian for High-T _c Cu Oxides 1 amailtonian H. Matsukawa (With 7 Figures)	45
	ing Energy of Cu-O Based Compounds o (With 3 Figures)	57
	Properties in the Cu-Oxide Superconductors cawa, J. Inoue, and T. Tohyama (With 9 Figures)	66
	Spectroscopy in High-T _c Superconducting Materials ni, K. Okada, S. Tanaka, and Y. Seino (With 8 Figures)	77
Dimensiona	Single-Particle Excitations in Strongly Correlated Two- il Systems moto and H.J. Schmidt (With 3 Figures)	88
-		00
One and Tv	and Superconductivity in Strongly Correlated Systems in vo Dimensions da (With 3 Figures)	98
Insulator	tics of the Charged Hole in the One-Dimensional Mott	
By N. Kaw	akami and A. Okiji (With 3 Figures)	105



ΙX

On the Application of Projection Techniques to the Electron Correlation Problem By K.W. Becker and P. Fulde (With 2 Figures)	115		
Slave-Fermion Mean Field Theory of the Hubbard Model By D. Yoshioka (With 3 Figures)			
Disorder and Interactions in the Hubbard Model By G.T. Zimanyi and E. Abrahams			
Characteristic Features of Electronic States in High-T _c Superconducting Oxides By M. Tachiki (With 3 Figures)	138		
Anderson Lattice Model of High-T _c Superconductors By D.M. Newns and P.C. Pattnaik (With 16 Figures)	146		
Quasi-Particles in the Degenerate Lattice Anderson Model By Y. Kuroda, Y. Ono, T. Matsuura, and H. Jichu (With 4 Figures) .	167		
Experimental Constraints and Theory of Layered High-T _c Superconductors By T. Schneider and M. Frick (With 5 Figures)	176		
Part III Experiments			
Physical Properties of High-T _c Oxide Superconductors – Effect of Doping on the Electronic State By S. Uchida, H. Takagi, Y. Tokura, N. Koshihara, and T. Arima (With 9 Figures)	194		
Andreev Reflection, Thermal Conductivity, Torque Magnetometry, and Hall Effect Studies on High-T _c Systems By N.P. Ong, T.W. Jing, Z.Z. Wang, J. Clayhold, S.J. Hagen, and T.R. Chien (With 6 Figures)	204		
Resistive State and Hall Effect in High-T _c Superconductors By Y. Iye (With 10 Figures)	213		
Raman Probing of Electronic Gap Excitations and Their Coupling to Phonons in High-T _c Superconductors By M.V. Klein, S.L. Cooper, F. Slakey, J.P. Rice, E.D. Bukowski, and D.M. Ginsberg (With 6 Figures)	226		
Magnetic Correlations in High- T_c Oxides in the Superconducting State By G. Shirane (With 7 Figures)	236		
NMR Studies of YBa ₂ Cu ₃ O _{7$-\delta$} (T _c = 90 K) By D.J. Durand, S.E. Barrett, C.H. Pennington, C.P. Slichter, E.D. Bukowski, T.A. Friedmann, J.P. Rice, and D.M. Ginsberg			
(With 5 Figures)	244		

NMR and NQR in Highly Correlated Metallic and Superconducting Cu Oxides By H. Yasuoka, T. Imai, and T. Shimizu (With 5 Figures)	254
NMR Study of High-T _c Superconductors By Y. Kitaoka, K. Ishida, F. Fujiwara, T. Kondo, K. Asayama, M. Horvatic, Y. Berthier, P. Butaud, P. Segransan, C. Berthier, H. Katayama-Yoshida, Y. Okabe, and T. Takahashi (With 7 Figures)	262
Tunneling Spectroscopy and Energy Gap of High-T _c Oxide Superconductors By J.S. Tsai and I. Takeuchi (With 4 Figures)	274
Optical Absorption in $La_{2-x}Sr_xCuO_4$ Epitaxial Thin Films By M. Suzuki (With 7 Figures)	280
Infrared Studies of Oxide Superconductors in the Normal and Superconducting States By R.T. Collins, Z. Schlesinger, F. Holtzberg, C. Feild, G. Koren, A. Gupta, D.G. Hinks, A.W. Mitchell, Y. Zheng, and B. Dabrowski (With 7 Figures)	289
Nature of the Electronic States Near the Fermi Level in High-T _c Superconductors: High-Energy Spectroscopic Evidence By A. Fujimori (With 9 Figures)	300
Photoemission, Inverse Photoemission and X-Ray Absorption Spectroscopies of Bi ₂ Sr ₂ CaCu ₂ O ₈ By T. Takahashi (With 9 Figures)	311
A New Family of High- T_c Superconductors: $(Ln_{1-x}Ce_x)_2(Ba_{1-y}Ln_y)_2Cu_3O_{10-z}$ (Ln: Nd, Sm, Eu and Gd) By J. Akimitsu and H. Sawa (With 8 Figures)	321
Magnetic Interactions in High-T _c Superconductors and Related Oxides By H.R. Ott, P. Birrer, F.N. Gygax, B. Hitti, E. Lippelt, A. Schenck, M. Weber, S. Barth, F. Hulliger, P. Allenspach, SW. Cheong, P. Fischer, Z. Fisk, A. Furrer, and B. Rupp (With 8 Figures)	329
Physical Properties of (Ba,K)BiO ₃ By M. Sato, S. Kondoh, and M. Sera (With 6 Figures)	341
Flux Creep and the Crossover to Flux Flow in the Resistivity of High-T _C Superconductors By A.P. Malozemoff, T.K. Worthington, E. Zeldov, N.C. Yeh, M.W. McElfresh, and F. Holtzberg (With 1 Figure)	349
Giant Fluctuation Model and the Field-Induced Broadening of the Superconducting Transition in Oxides By K. Kitazawa, S. Kambe, and M. Naito (With 8 Figures)	361

Flux Dynamics and Electronic Anisotropy in High-T _c Superconductors By B. Batlogg, T.T.M. Palstra, L.F. Schneemeyer, and J.V. Waszczak (With 4 Figures)		368
Part IV	Summary	
	Talk: Experimental	376
•	Talk: Theory	383
Part V	Abstracts	
	merical Results on the Two-Dimensional Hubbard Model Ila, S. Baroni, R. Car, M. Parrinello, A. Parola, atti	390
Quantum A	and and Spin-Peierls Ground States of Low-Dimensional antiferromagnets	391
	opper Oxides: Where Are They? How Do They Conduct? hey Affect Superconductivity?	392
Relevance	citations in CuO ₂ Sheets With and Without Electron Doping: to Superconductivity Produced by Electron Doping ura, H. Takagi, S. Kosihara, and S. Uchida	393
Experiment By Z.X. Zi	tal Observations on Superconducting Single Crystals	394
Index of C	ontributors	395